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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/380,826	11/22/1999	RODERICK J. CHAPPEL	DAVIE79.001A	3117

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EXAMINER
HINES, JANA A

ART UNIT	PAPER NUMBER
1645	20

DATE MAILED: 09/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/380,826	CHAPPEL	
	Examiner	Art Unit	
	Ja-Na A Hines	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *25 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20,75 and 124-126* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20, 75 and 124-126* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 25 June 2002 has been entered.

Withdrawal of Rejections

2. The following rejections have been withdrawn in view of applicants' amendments, arguments and declaration:

A) The rejection of claims 1-2 and 15-18 under 35 U.S.C. 102(b) as being anticipated by Hookey (EMBL Z21634);

B) The rejection of claims 1-6, 10 and 19 under 35 U.S.C. 102(b) as being anticipated by Perolat et al., (Abstracts);

C) The rejection of claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hookey (EMBL Z21634) or Perolat et al., (Abstracts) in view of Chappel et al., (Manipulating Pig Production);

D) The rejection of claims 8, 11-14 under 35 U.S.C. 103(a) as being unpatentable over Hookey (EMBL Z21634) or Perolat et al., (Abstracts) in view of Chappel et al., (Pig Research Report); and

E) The rejection of claims 5-8, 10, 12, 75 and 124-126 under 35 U.S.C. 103(a) as being unpatentable over Hookey (EMBL Z21634) or Perolat et al., (Abstracts) in view of Haake et al., (US Patent 6,643,754).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-2, 75 and 124-126 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

In particular, claim 1 is drawn to an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684). The other dependent claims are drawn to growth condition, the infectiousness of the bacterium or the symptoms the bacterium can cause.

The specification does not provide evidence of a Leptospira bacterium that is serologically cross-reactive to the deposited Leptospira strain. The specification at pages 4 and 5 define the term serovar and serogroups but do not teach the identity of

bacterial strains serologically cross-reactive to the deposited strain. Page 4 lines 11-17 state that members of the serogroup Hurstbridge refers to a serological group of Leptospira whose members cross-agglutinate with shared group antigens of L. fainei deposited strain; however the specification does not state the identity or structural characteristics of a cross-reactive strain that has the claimed growth characteristics or the claimed ability to infect. Moreover, there is evidence that other bacterial species have not yet been identified and/or classified into the stated servovars. In view of the lack of evidence, it is apparent that Applicants were not in possession of additional bacterial strains, at the time of filing the instant application such as an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the deposited Leptospira strain.

With the exception of deposited Leptospira bacterium identified as WKID (AGAL Accession NO. N95/69684), the skilled artisan cannot envision the detailed structure of the isolated bacterium, thus conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation. An adequate description requires more than a mere statement that it is part of the invention. The bacterium itself, or a nucleic acid structure is required. See *Fiers v. Revel*, 25 USPQ 2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Lts.*, 18 USPQ2d 1016. The growth characteristics and infection activity distinguishes the claimed bacterium strain only by what it does, i.e., by growth and infection, which are purely functional distinctions. Even where there is an actual reduction to practice, which may demonstrate possession of an embodiment of an

invention, it does not necessarily describe what the claimed invention is. The instant specification and claims describe an isolated bacterium by its function i.e., growth and infection abilities, however this description does not describe the claimed bacterium itself.

See also, *In The Reagents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), where the court held that a generic statement that defines a genus of nucleic acids by only their functional activity does not provide an adequate description of the genus. The court indicated that while Applicants are not required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of DNA molecules, usually defined by a nucleotide sequence, falling within the scope of the claimed genus. At section B(1), the court states that "An adequate written description of a DNA...'requires a precise definition, such as by structure, formula, chemical name, or physical properties', not a mere wish or plan for obtaining the claimed chemical invention".

Thus, in the absence of sequence information of the bacterium or some structural characteristics of the bacterium, a bacterium described only by its ability to grow and infect fails to meet the written description requirements. Therefore only the bacterial strain deposited as WKID (AGAL Accession NO. N95/69684), and not the full breadth of the claims meets the written description provision of 35 USC 112, first paragraph.

Claims 15-18 are drawn to an isolated Leptospira bacterium containing nucleic acids having nucleotide sequences that are at least about 80% identical to a nucleotide

sequence selected from the group consisting of SEQ ID NO: 1-2, 4-7 and a complementary nucleotides sequence.

Sequences having 80%, 85% or even 97% identity to either SEQ ID NO: 1-2, or 4-7 or complementary sequences fail to meet the written description provision of 35 UCS 112, first paragraph. Vas-Cath Inc. V. Mahurkar, 19 USPQ2d 1111, make clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the 'written description' inquiry, whatever is now claimed." (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116). The specification only discloses SEQ ID NO: 1-2 and 4-7, there is no disclosure of nucleotide sequences with 80% identity of SED ID NO: 1- 2 or 4-7 or complementary sequences comprised within the Leptospira bacterium. Thus, the structure of these nucleic acid molecules is not defined. Even though the claims recite sequence identification numbers, the skilled artisan cannot envision the detailed structure of the encompassed nucleic acid molecules since the specification has not defined what the 20% variables can be. Moreover, a skilled artisan cannot envision the detailed structure of complementary sequences. Therefore, conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method for determining sequence identity. Adequate written description requires more than a mere statement that it is part of the invention and a reference to a potential method of expression. The nucleic acid itself is required. See *Fiers v. Revel*, 25 USPQ 2d 1601 at

1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Lts.*, 18 USPQ2d 1016.

The claims fail to recite the precise definition of the nucleic acid sequence with at least 80% identity to SEQ ID NO: 1-2, 4-7 and the complementary sequences. Currently the generic recitation of 80% identity is insufficient to support the claims as provided by the Interim Written Description Guidelines published in the June 15, 1998 Federal Register at Volume 63, Number 114, pages 32639-32645. Therefore, the full breadth of the claims fails to meets the written description provision of 35 USC 112, first paragraph.

4. Claims 1-20, 75 and 124-126 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

Neither the specification nor originally presented claims provides support for an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684), wherein the cross-reactive bacterium has the ability to grow under the recited conditions and can infect and/or cause the recited symptoms in a host.

Applicant did not point to support in the specification for an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID

(AGAL Accession NO. N95/69684). Moreover, applicant failed to specifically point to the identity or provide structural characteristics of an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684). Thus, there appears to be no teaching of an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684). Applicant has pointed to pages 4-6 of the instant specification and claims for support of the amendment which are drawn to the *Leptospira fainei* WKID deposited strain and it description, however it appears that the entire specification appears to fail to recite support for the newly recited bacterium that is serologically cross-reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684). Therefore, it appears that there is no support in the specification. Therefore, applicants must specifically point to page and line number support for the identity an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684) as recited by the newly added amendments. Therefore, the new claims incorporate new matter and are accordingly rejected.

5. Claims 1-20, 75 and 124-126 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are drawn to an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684). The specification teaches the identity of the Leptospira strain WKID (AGAL Accession NO. N95/69684), however fails to teach the identity of strains that are cross-reactive. Applicant has pointed to page 43 of the specification and to the provided declaration of Dr. Chappel stating that the deposited WKID strain was sero-negative and therefore displayed no cross reactivity to other Leptospires. Moreover the WKID isolate was tested against all 23 available serogroups of Leptospires at the Pasteur Institute in Paris and it was determined that there was no serological cross reactivity between serovar Hurst bridge and serovar Lyme. The specification does not teach an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684). The specification fails to teach examples of the isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684). Therefore, the specification fails to enable to an isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684).

Moreover, if the isolated pathogenic Leptospria bacterium that is serologically cross reactive to the Leptospira strain WKID (AGAL Accession NO. N95/69684) is not enabled, then similarly the bacterium containing the nucleotide sequences that are at least about 80% identical to SEQID NO:1-2, 4-7 and the complementary nucleotides sequences are not enabled. There is no teaching of bacterial primers which have an

about 20% mismatch. The specification fails to identify an isolated bacterium with the recited characteristics. There is no teaching of how to determine which of the non-identical nucleotides will contain the 20% mismatch. Therefore, the specification fails to enable to bacterium containing the nucleotide sequences that are at least about 80% identical to SEQID NO: 1-2, 4-7 and the complementary nucleotide sequences. The specification is not enabled for any variants of a polynucleotide comprising a sequence having 80% identity to SEQ ID NO: 1-2, 4-7 or complementary sequences because the specification fails to teach that such sequences with 80% identity can be contained within the Leptospira bacterium that is cross reactive with the deposited strain. The specification lacks any written description of a structure or relevant identifying characteristics of a representative number of polynucleotides encoding a representative number of polypeptides sufficient to allow one skilled in the art to determine that the inventor had possession of the invention as claimed. The specification fails to teach what the critical nucleic acid which can or cannot be modified and still achieve a nucleic acid the required cross reactivity or what nucleic acids can be inserted, deleted or substituted within an 80% identical sequence. The art teaches that replacement of a single nucleic acid residue may lead to both structural and functional changes in the biological activity of a protein. One of skill in the art would be reduced to merely randomly altering nucleic acids which would lead to unpredictable results regarding the cross reactive activity of the isolated bacterium. The art is replete with examples of one nucleotide being deleted or inserted at a single place within the coding sequence and thus being frame shifted. Thus it is highly likely that the expression product will have

little in common structurally or functionally with the deposited Leptospira strain and would still be cross reactive.

In absence of further guidance from Applicants, the skilled artisan would have to discover what the appropriate additions, deletion and substitutions would be. Such experimentation requires ingenuity beyond that expected of one of ordinary skill in the art. Such need for non-routine experimentation demonstrates that the specification is not enabled for any asserted use or well-established use of a sequence having 80% identity to SEQ ID NO:1-2, 4-7 and complementary sequences. The additions/ deletions, substitutions or insertions of any nucleic acid in any location within the polynucleotide would not predictably result in the isolated bacterium containing said polynucleotide sequence. The specification does not provide guidance on how any nucleic acids can be substituted or inserted, nor does the specification provide guidance on how any location can be used to produce a stable polynucleotide. No working examples are shown containing the missing information. Without such information, one of skill in the art could not predict which deletions, substitutions or insertions or any combination would result in the desired polynucleotide. Accordingly, one of skill in the art would be required to perform undue experimentation to use any nucleic acid at any location to produce such a polynucleotide. Therefore, one skilled in the art could not make and/or use the invention without undue experimentation.

6. Claims 1-20, 75 and 124-126 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "serologically cross reactive" is a relative term which renders the claim indefinite. The term "serologically cross reactive" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree cross reactivity, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Thus the metes and bounds of the terms cannot be determined.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ja-Na A Hines whose telephone number is 703-305-0487. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynette Smith can be reached on 703-308-3909. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Ja-Na Hines
August 30, 2002

LYNETTE R. F. SMITH
SUPERVISORY PATENT EXAMINER
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